

REMARKS**Overview**

This Amendment accompanies a Request For Continued Examination (RCE).

Claims 1-9, 11-14, and 16-17 are pending in this application. Claims 1, 5, 6, 12 and 14 have been amended. Claim 15 has been cancelled as it does not introduce any limitations not present in claim 14. Claim 1 has been amended to positively recite that the second resistive foil is also selected to provide a cumulative effect of reduction of resistance change due to power. Claims 5,6, and 12 have been amended to also refer to the second resistive foil. Claim 14 has also been amended to make clear that the second resistive foil is also selected to provide a cumulative effect of reduction of resistance change due to power. Claims 16-17 are new. The present response is an earnest effort to secure immediate allowance of all pending claims. Reconsideration and passage to issuance is therefore respectfully requested.

Issues under 35 U.S.C. § 103

Claims 1-9 and 11-15 have been rejected under 35 U.S.C. § 103(a) as being obvious over U. S. Patent No. 4,677,413 to Zandman in view of U. S. Patent No. 6,404,324 to Witt et al. These rejections are respectfully traversed.

As the Examiner recognizes, Zandman does not disclose foils on both sides of the substrate, and Witt does not disclose using low TCR foil. The Examiner's position appears to be that Zandman discloses the claimed invention except for foils on both sides of the substrate and that Witt discloses identical resistors on opposite sides of a substrate, thus rendering the claimed invention obvious. The Examiner indicates that the motivation to combine Zandman and Witt is provided by Witt which teaches solving the problem of bending so as to handle more power, and

also to allow reduced cost, and reduced size and circuit board mounting, all performed by putting preferably an identical resistor on both sides (Office Action, p. 4, numbered paragraph 3). Such a position might be proper, if the Applicant was merely claiming a resistor with foil cemented to both sides of a substrate, but that is not what is claimed.

Here, the Applicant has discovered that by proper selection of materials "a cumulative effect of reduction of resistance change due to power" can be provided where low TCR foil is used. Here, claim 1 requires both the first and the second resistive foils to have "a low TCR of 0.1 to 1 ppm/°C." The claimed invention requires low TCR foil cemented to opposite sides of a substrate hence requiring low TCR and power on both sides of the resistor which is essential for the precision of current sensors. Thus, the fact that the resistive foil is low TCR is highly significant to the claimed invention.

Zandman uses a single low TCR foil, and through proper selection of materials manages to partially offset change in resistance due to temperature changes and change in resistance due to stress. Zandman does not recognize the requirement of claim 1 that the proper selection of materials provides "a cumulative effect of reduction of resistance change due to power." Placing low TCR foil on both sides of a substrate will increase the power of the resistor. Increasing the power of the resistor would be expected to increase the resistance change due to power. To one skilled in the art, it simply would make no sense to use low TCR foil to decrease resistance change due to temperature, and then put the low TCR foil on both sides of a substrate which results in an increase of the resistance change due to power. Such a combination would not make sense because the benefits of using low TCR foil would effectively be lost by increasing the resistance change due to power.

Neither Zandman nor Witt provide any appropriate mechanism for reducing the effect of resistance due to power. Without controlling the effect of resistance due to power, having low TCR foil on opposite surfaces of a substrate simply makes no sense as the benefit of using low TCR foil would be lost. Thus, it can not be obvious to combine Zandman nor Witt in the manner proposed by the Examiner. Therefore, the Examiner is asked to withdraw these rejections on this basis and find all claims in proper form for immediate allowance.

Claims 2-9 and 11-13 depend from claim 1 and therefore these rejections should also be withdrawn. There is also an independent basis for each of claims 2-9. Each of these claims requires selection of a particular parameter in order "to provide the cumulative effect of reduction of resistance change due to power." Thus each of these claims further emphasizes one of the advantages of the claimed invention not recognized in the cited prior art: namely using low TCR foil on opposite surfaces of a substrate yet being able to control the effect of resistance due to power.

Claim 14 also requires both "a first resistive foil having a low TCR of 0.1 to 1 ppm/°C" being "cemented" to the insulating substrate. Thus claim 14 is distinguishable from Zandman and Witt for the reasons expressed with respect to claim 1.

In the Advisory Action of November 23, 2005, the Examiner indicated that further consideration of the claims in light of U.S. Patent No. 5,039,976 to Drabkin would need to be made. The claimed invention is patentably distinguishable from Drabkin.

Drabkin is directed to a high-precision and high-stability resistor element. The resistor of Drabkin uses a metal foil pattern with low TCR bonded on the substrate with a second substrate bonded to the foil pattern to sandwich the foil pattern between the two insulating substrates.

Like Zandman and Witt, Drabkin is not directed to controlling the effect of resistance due to power. Instead, Drabkin is directed to a high-precision and high-stability resistor element.

New Claims

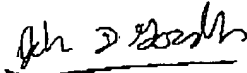
Claims 16 and 17 are new and do not introduce new matter. Claims 16-17 require "first and second resistive foils" with "a first adhesive" and "a second adhesive" and "the resistive values and the TCR's of the first and second resistive foils being chosen so that when power is applied to the first and second resistive foils the first resistive foil is heated equally with the second resistive foil." These limitations, taken together to provide the proper context of the claimed invention distinguish Zandman, Witt, and Drabkin.

Conclusion

This amendment accompanies the filing of a Request for Continued Examination (RCE). Please charge Deposit Account No. 26-0084 the amount of \$790.00 for the RCE per the attached transmittal. This is also a request to extend the period for filing a response in the above-identified application for one month from December 1, 2005 to January 1, 2006. Applicant is a large entity; therefore, please charge Deposit Account number 26-0084 in the amount of \$120.00 to cover the cost of the one month extension.

No other fees or extensions of time are believed to be due in connection with this amendment; however, consider this a request for any extension inadvertently omitted, and charge any additional fees to Deposit Account No. 26-0084.

Respectfully submitted,



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